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the reddish costa is *papillose* near the apex, and the cells of the lamina are *round-hexagonal*; also, by the strong ventral protrusion, or bulging, of the cell walls, the ventral side of the lamina is beautifully *mamillose*, as is well shown in Limpricht's figure (*l. c.*, p. 579); and the mamilllose cells of the ventral side of the costa are green; the rest of the costa is yellow.

The discrepancies, then, are:

1. The papillae on the dorsal side of the leaf base are low and inconspicuous.
2. The cells of the leaf base here are only faintly yellowish.
3. The antheridia are orange-yellow instead of hyaline.
4. The stem leaves are strongly serrate only above the middle, less so from there to the base.
5. The calyptra remains attached to our plant.

This condition of things is the more interesting since Limpricht records the species "In calcareous, swampy meadows in the North German lowland, very rare, now only known from North America." After citing the few North German stations he concludes thus: "Other stations, . . . especially those from the Alpine regions, are almost all to be transferred to *Timmia bavarica*, a few to *Timmia norvegica*."

I have seen no typical material of *Timmia megapolitana*, *sensu* Limpricht, and I would consider it a favor if those moss friends who have good typical material from North America with strong dorsal papillae on the leaf base, which must *not be hyaline*, with *hyaline antheridia* with stem leaves *serrate to base*, and with fugacious calyptra, would exchange some of this *good* material with me,

In conclusion, this remark: Our plant has been called *Timmia megapolitana bavarica* Brid. Limpricht places *Timmia norvegica* between *megapolitana* and *bavarica*, as a silent protest against making the latter a variety of the former. Both plants, i. e. *T. megapolitana* and *T. bavarica*, it is true, are autoicous; our plant here agrees with either. But the leaf cells in *bavarica* are "quadratisch," i. e. square, while in *megapolitana* and in our plant they are plainly hexagonal.

WINONA STATE NORMAL, WINONA. MINN.

LITTLE JOURNEYS INTO MOSSLAND

I. EARLY BRYOLOGICAL EXPERIENCES

GEORGE B. KAISER

Baedeker describes the valley of the Wissahickon Creek as "a miniature Alpine gorge." This thickly wooded region, whose naturally wild aspect has been carefully preserved, offers the botanist, particularly the cryptogamic botanist of Philadelphia, a delightful field for observation and for collecting. Hemlock, oak, birch, tulip tree, beech, red maple, box elder, and ironwood border the stream, while mica-schist, hornblende, and gneiss, where garnets are found, with occasional outcroppings of quartz, are mineralogical features. Even on the warmest days in summer, grateful shade lies cool and deep beside the north-

easterly banks of the little-frequented driveway, where the automobile is happily excluded, and here the snow and ice of winter prevail longer than for many a mile around.

In the upper portion of the Wissahickon Valley began my more intensive study of the mosses. It is true: hair cap, funaria, sphagna, and other undifferentiated species just mentally grouped as "moss," had long been familiar objects, but a certain early winter's day marked a line of departure in botanical pursuits, filled with determination to intimately know the bryophytes of the Philadelphia neighborhood.

It was a cold gray afternoon with a feeling of snow in the air. The leaves of deciduous trees had fallen, to cover the earth with a russet mantle. A cardinal flashed red among the bare oaks and birches and the abundant hemlock displayed a sombre green. Green, too, were the Christmas ferns and green were many of our friends, the mosses.

The banks were evidently clothed with a number of species of which two predominated. These mosses were found to be *Dicranella heteromalla* and *Catharinea angustata*. The former in ample clumps with soft, slender, green leaves appearing as if brushed to one side, was frequently fertile. The glossy brown sporophytes were conspicuous, the capsules in general still holding their lids, although a few, of duller brown, already showed the bright red teeth of the dicranaceous peristome, so attractive under the hand-lens. What objects of never-failing interest in their fine adaptations for spore dissemination are these peristomes of the mosses! Unforgettable moments of delight may be spent in contemplating under low powers of the compound microscope their delicate colors and markings and infinite variety. *Ceratodon*, *Bartramia*, *Funaria*, *Mnium*—common genera readily collected by the amateur—all possess peristomes of rare beauty with which every student of the mosses should be familiar.

The other first acquaintance of that wintry day, *Catharinea angustata*, was perhaps even more common than the *Dicranella*. The plants with curled leaves, olive green to brownish red in color, appeared along the banks on every hand through the valley of the Wissahickon and, when present, the sporophytes of deep claret red stood in thick companies retaining their long-pointed opercula, which are not lost until early spring. Here is another peristome to examine. In dry weather a disk called the epiphragm is borne aloft by the thick teeth and from beneath it the spores are sifted out. There is a tantalizing impulse to pass one's hand over the mature capsules, when clouds of spores arise, resembling the fumes of nitrous oxide gas which escape from nitric acid wherein copper is dissolving. The larger *Catharinea undulata* was also seen, but only later was it clearly differentiated from its more common brother.

Dicranella and *Catharinea*, then, were my first real acquaintances among the mosses and, toward dusk, when I returned home, that day of long ago, amid the swirling snowflakes at last released from the dun sky, I brought with me specimens of these and memories to be treasured throughout ensuing years of moss collecting and microscopic study.

It is surprising how well one recalls the time and place where a new plant has been found. Whether the species be orchid or alga, lichen or moss, it matters little; the experience seems to have photographed itself indelibly on our mind, and, while memory lasts, the circumstances and surroundings all arise untarnished at the evocation of the charmed name, and we live again in the scenes of Nature's loveliness in which it was our good fortune to first really meet and know the living thing which was then to us a new species.

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MOSSES FROM THE CASPIAN AND BLACK SEA REGIONS

WM. EDW. NICHOLSON

I have recently had the opportunity of going through a small collection of mosses made by my friend Mr. W. J. Parsons, who was with the British forces in northern Persia and Transcaucasia in 1917, and, as the district is not much visited by botanists, a list of the species gathered may be of some interest to the readers of THE BRYOLOGIST. The species are for the most part of general European distribution, although there are several of a definitely Asiatic distribution, such as *Barbula excurrens* Broth., *Tortula desertorum* Broth., *T. Bornmuelleri* Schiffn., and *Leucodon immersus* Lindb. The collections were made near the south shores of the Caspian, in the Elburz Mountains at the back of this, and in the neighborhood of Batoum on the Black Sea. I am indebted to Mr. H. N. Dixon for assistance in identifying some of the less well-known species in the following list:

Ditrichum pallidum Hampe. Near Batoum.

Pleurochaete squarrosa (Brid.) Lindb. Near the Caspian. Part of the gathering is considerably more robust than any form which I have seen from the British Isles, but it otherwise agrees with the type in all essential respects, and I have found a somewhat similar form in the island of Majorca.

Barbula convoluta Hedw. Near the Caspian.

B. excurrens Broth. Mr. Dixon refers a small gathering of a stunted plant from the Elburz Mountains to this species with some hesitation.

Crossidium squamigerum (Viv.) Jur. Elburz Mountains.

Tortula desertorum Broth. Near the Caspian; growing with *Pleurochaete squarrosa*.

T. Bornmuelleri Schiffn. Elburz Mountains. This plant is very closely allied to the last species, of which it has the appearance of being an undeveloped form. Mr. Dixon expressed a doubt as to whether it is specifically distinct.

Grimmia campestris Burch. Elburz Mountains.

Webera nutans Hedw. Elburz Mountains.

Bryum atropurpureum W. & M. Near the Caspian.

B. argenteum L. Near the Caspian.

Catharinaea undulata (L.) W. & M. Near Batoum.

C. angustata Brid. Near Batoum, c. fr.